

Provo, Utah, April 16, 1915.

Bureau of Soils,
Department of Agriculture,
Washington, D. C.

Gentlemen:

There is pending between all the parties claiming rights to the use of water of the Provo River a litigation. The trial of the case has not yet been made, pending the trial the parties are operating under a stipulation, as provided in the stipulation I have been appointed Commissioner to make distribution for the season of 1915.

I shall be under the necessity of determining reasonable use and necessities for irrigation on at least a number of the areas irrigated from Provo River, my time and opportunities for doing such work will be limited.

The main problems, as I view it, is to determine the quantity or volume used in an irrigation, and further to determine how much of such quantity or volume is held in the soil. I propose in the first proposition to measure the water used on the field in irrigating the same. I propose in the second proposition to proceed as follows; With an ordinary soil auger cut out a section of soil, just before the irrigation, and weigh the same, after the irrigation (A sufficient length of time to have permitted the soil to reach uniformity) cut out a second section in the immediate vicinity of the first, and of equal volume, and weigh, to determine the volume or weight of the water retained in the soil supplied by the irrigation referred to above.

The foregoing will serve to show about what I am trying to get at. In the light of your extended experience, please advise me if my method is fairly accurate in making these investigations, and if the soil auger is a proper instrument for collecting these samples, and further what type (and make and address of manufacture) of weighing instrument would you recommend to be used in the field, necessarily small and portable, but having a weighing capacity to handle borings of 2 inch auger to 4 foot depth.

I expect to retain the sample collected before the irrigation and later "Air Dry" and Saturate, to get the relative percentages and tabulate the whole experiment or test on a table which I enclose a copy herewith.

Am I using the proper 'form' and the proper method. Any suggestion to a better method will be appreciated.

In this section there is more than 25,000 acres of land covering a great variety of soils and diversified crops.

In this work I will be very thankful for any assistance you may be able to give me.

Yours truly,

Commissioner.

(Copy)

Provo, Utah, April 16, 1915.

Hon. Reed Smoot,

U.S. Senate,

Washington, D.C.

Dear Sir:

I am enclosing herewith letter to the Bureau of Soils, I will be pleased to have you take this matter up with the Department of Agriculture, and render whatever assistance is available and proper. I am assured I can get more complete information through this source than from our Agriculture College. As I desire to get at this work as soon as possible, I will appreciate an immediate reply.

Yours respectfully,

Commissioner Provo River.

EXTENSION DEPARTMENTS

Farmers' Institutes and Schools,
.....JOHN T. CAINE, III
Boys' and Girls' Club Work,
.....J. C. HOGENSON
Farm and Home Demonstration,
(County Agents).....R. J. EVANS
Correspondence Studies,J. H. LINFORD
Social and Home Economics Associations,
.....GERTRUDE McCHEYNE
High School Club Work...O.L. ANDERSON
Girls' Club WorkCLAIRE PARRISH

The Departments of Publications and
of Trains, Fairs and Exhibits are under
the direct supervision of the Director

UTAH AGRICULTURAL COLLEGE

JOHN A. WIDTSOE, PRESIDENT

THE EXTENSION DIVISION

E. G. PETERSON, DIRECTOR

The county agent work, the boys' and girls' and high school club work and
the work in dairying and in farm management are conducted in co-operation
with the Bureau of Plant Industry and Bureau of Animal Industry,
United States Department of Agriculture.

EXTENSION SPECIALISTS

JOHN T. CAINE, III.....Animal Husbandry
R. J. EVANS,
Seed Breeding and General Agronomy
ELEANOR WILKINSON, Home Economics
L. M. WINSOR.....Irrigation and Drainage
BEN R. ELDREDGEDairying
J. W. FAXMAN.....Dry Farming
E. B. BROSSARD.....Farm Management

COUNTY AGENTS

LORIN A. MERRILL.....Sevier County
J. P. WELCH.....Millard County
R. H. STEWART, Carbon & Emery Counties
M. L. HARRIS.....Uinta Basin
H. J. WEBB.....Salt Lake County
H. A. CHRISTIANSEN.....Beaver County
A. B. BALLANTYNE.....Utah County
DAVID SHARP.....Iron County

LOGAN

Provo May 8 1915.

Mr C. P. Wentz, Water Commissioner
Provo, Utah,

Dear Mr Wentz:-

Dr Widtsoe's and Dr

E. G. Peterson's letters in reply to those of mine
proposing the cooperative irrigation work you
and others placed before me, have been received.
Dr Widtsoe says. I am sorry that it does not
seem advisable ~~to~~ at this time to undertake
the work that you propose, but I believe
we can give equal service to Utah
County in other ways than by undertaking
just now an investigation in a legal
controversy when we would be under
limitations that would make it difficult
to obtain conclusions of real service to
any of the parties interested."

Dr E. G. Peterson writes. "The College is designed
primarily to serve the farmers and industrial
workers generally. Any action by the College may
be considered justified if it has in view the
development of agriculture and the farmers interest.

In the case which you mention it appears that a dispute exists in regard to the amount of water to which a farmer is justly entitled.

The accumulation of reliable scientific data on this point over the large and diverse soil area included in the controversy would be the work of years not months.

You state that the information should be available by November 1916. Problems preliminary to the important one of duty under a given condition, would of necessity be taken up in such an investigation. It would be necessary in all probability in order to make the investigation entirely trustworthy to carry the investigation over a series of years in order to check results and in order to meet the varying climatological conditions.

It is thought best therefore that this work be not undertaken at this time. We appreciate every opportunity to aid the productive citizens of the state and especially those who are doing so much to lay way of increasing the state's agricultural area, but the problem presented here is such that the College could not be of real service.

Please express to both sides of the controversy, who have approached you on this matter, our regret that that we feel we cannot aid

them in their present difficult situation,
in the way they have suggested."

Personally I regret this situation and I hope
that some way will be found by which this
work can be undertaken.

Very Truly Yours,

A B B Allentown
County Agent.

Provo, May 8, 1915.

Mr. C. T. Wentz, Water Commissioner,
Provo, Utah.

Dear Mr. Wentz:

Dr. Widtsoës and Dr. E. G. Peterson's letters in reply to those of mine proposing the cooperative irrigation work you and others placed before me, have been received. Dr. Widtshe says, "I am sorry that it does not seem advisable at this time to undertake the work that you propose, but I believe we can give equal service to Utah County in other ways than by undertaking just now an investigation in a legal controversy when we would be under limitations that would make it difficult to obtain conclusions of real service to any of the parties interested."

Dr. E. G. Peterson writes, "The College is designed primarily to serve the farmers and industrial workers generally. Any action by the College may be considered justified if it has in view the development of agriculture and the farmer's interest. In the case which you mention, it appears that a dispute exists in regard to the amount of water to which a farmer is justly entitled. The accumulation of reliable scientific data on this point over the large and diverse soil area included in the controversy would be the work of years, not months.

You state that the information should be available by November 1915. Problems preliminary to the important one of duty under a given condition, would of necessity be taken up in such an investigation. It would be necessary in all probability in order to make the investigation entirely trustworthy to carry the investigation over a series of years in order to check results and in order to meet the varying climatological conditions.

It is thought best, therefore, that this work be not undertaken at this time. We appreciate every opportunity to aid the productive citizens of the state and especially those who are doing so much by way of increasing the State's Agricultural area, but the problem here presented is such that the College could not be of real service.

12 B

W.T.W #2. 5-8-15.

Please express to both sides of the controversy who have approached you on this matter, our regret that we feel we cannot aid them in their present difficult situation, in the way they have suggested."

Personally I regret this situation and I hope that some way will be found by which this work can be undertaken.

Very truly yours,

A. B. Ballantyne, County Agent.

U. S. Dept. Agr.
Bureau of Plant Industry
and
Ortala County Commissioners
Cooperating

Mr. J. P. Wentz.
Orms

Dear Sir

Am enclosing a few copy of
the letter from Pres. Middleton
as promised.

Yours Truly

A. B. Ballantyne

Ortala County Agent

Agent U. S. Dept. Agr

(Copy)

Bureau of Plant Industry and Utah
County Commissioners, Cooperating.

Mr. T. F. Wentz,
Provo, Utah.

Dear Sir:

Am enclosing a pen copy of the letter from Pres.
Widtsoe as promised.

Yours truly,

A. B. Ballantyne,

Utah County Agent.

Agent U.S. Dept. Agr.

Loyan Ont May 24 1913.

Mr A B B allantype
Plover Ont.

Dear Friend.

I have your letter of May the eighteenth and also the letter to you from Mr Wentz. If the work in question can be undertaken in such a way that we can be reasonably certain that we can carry it on until reliable results have been obtained, and without the ill will of either side of the ^{present} controversy, I have no doubt that a beginning may be made at almost any time. The communications from those interested, however, were such as to lead us to believe that findings had to be obtained by next fall and moreover the requests came largely from one side.

I am tremendously interested in investigations of the kind and believe that the situation in Ontario county offers an excellent opportunity, providing we can find

ways and means of accomplishing what
really should be done. I am asking
Dr Peterson to give it still more of
his consideration. You will hear from
us again

Sincerely Yours.

John A. Whitson
President

(Copy)

Logan, Utah, May 24, 1915.

Mr. A. B. Ballantyne,
Provo, Utah.

Dear Friend:

I have your letter of May the eighteenth and also the letter to you from Mr. Wentz. If the work in question can be undertaken in such a way that we can be reasonably certain that we can carry it on until reliable results have been obtained, and without the ill will of either side of the present controversy, I have no doubt that a beginning may be made at almost any time. The communications from those interested, however, were such as to lead us to believe that findings had to be obtained by next fall and moreover the requests came largely from one side. I am tremendously interested in investigations of the kind and believe that the situation in Utah County offers an excellent opportunity, providing we can find ways and means of accomplishing what really should be done. I am asking Dr. Peterson to give it still more of his consideration. You will hear from us again.

Sincerely yours,

John A. Widtsoe,

President.

lele
LBO.J

UNITED STATES DEPARTMENT OF AGRICULTURE,
BUREAU OF SOILS,
WASHINGTON, D. C.

ADDRESS ALL COMMUNICATIONS TO
"CHIEF, BUREAU OF SOILS."

PHYSICAL AND CHEMICAL INVESTIGATIONS.

May 13, 1915.

Mr. T. F. Wentz,
Irrigation Commissioner,
Commercial Bank Building,
Provo, Utah.

Dear Sir:

Replying to your letter of the 16th ultimo, forwarded to us by Senator Smoot, regarding soil moisture in Provo River irrigated land, we will state that your plan seems to be a very good one with the exception of the soil volume measurements. To determine the volume of a definite amount of soil is laborious and does not appear to be necessary for your problem.

If the moisture determinations are to be made in the field the best equipment would probably be a soil auger, sample cans, a balance, and an oven. Almost any auger can be used if the cutting end of the blade is removed. Our soil augers are similar to those sold by the Central Scientific Company of Chicago. The best type of portable balance is the torsion balance sold by most laboratory supply dealers, including the above firm. For convenience, metric weights should of course be used. Any oven with kerosene or gasoline burner which will enable a temperature of about 105° C. to be maintained for several hours will serve.

16
Samples at the depth you desire should be made up from the castings of several distributed borings, placed in tight sample cans and weighed. After drying to constant weight at 105° C. and weighing, the

Woz, T. F., #2, 5-13-15.

moisture content in percent of dry soil can be determined. The objection to the use of air dry soil for moisture determinations is that its moisture content varies greatly with the texture.

If the moisture determinations can be made in your office or laboratory, the only necessary field operation will be the placing of the soil samples immediately after collection in an air tight container for forwarding to the office. The ordinary half pint fruit jars with rubber rings can be used.

Since your soils are of various types, it might be desirable to determine the optimum moisture content of the soils under observation. By optimum is meant that moisture content most favorable to crop growth, and in practice is usually judged by the appearance and feel of the soil.

If you desire a scientific method of determining the optimum, the simplest is that described by Dr. R. O. E. Davis in the Journal of Industrial and Engineering Chemistry, Vol. 6, p. 1008, Dec., 1914, under the title "A simple method for determining the critical moisture content of soils."

If at any time we can further assist you, we shall be pleased to give you our service.

Very truly yours,

Chief of Bureau.

Provo, Utah, May 17, 1915.

A. B. Ballantyne

County Agent Utah Agricultural College.

Provo, Utah.

Dear Sir;

Your letter of the 8 inst. at hand, I am very much dissatisfied in your reply, it does seem to me, an unusual opportunity for the college to be of inestimable assistance to farmers in this section at this particular time.

I do not contend that anyone can establish in one season the duty of water over an area of varied soils and diversified crops.

We do not ask that the College shall assume to be "Judge And Jury" and settle with a word a pending litigation, and we realize with so short a time no human being is capable of gathering the facts and forming a definite conclusion, that should be adopted for eternity.

neither This case is going to trial November 1st, and nearly all the litigants know how to determine or proceed to gather the fundamental data necessary for an equitable settlement, they are one and all unprepared.

I have furnished you with a copy of a report filed with the Court, and which shows that at sometimes and under like conditions a range of duty exists from 20 to 105 acres per second foot, -- this condition should not continue.

We all can call to mind many cases of this kind that have been held under temporary decrees, which have from time to time been modified as the court was advised, is it not possible that this procedure will be followed in this case? By the extracts before mentioned, you may see the results of a final decree of court made without all the necessary data submitted. Before the final decree in this case, this work must be done, -- it must be sometime begun, is it not advisable to go to trial without even a beginning?

Dr. Widstoe as you quote him says; "Undertaking an investigation into a legal controversy", to my mind this is not in any sense a legal controversy it is pure and simple a question of fact, an agricultural problem, a determination of a physical requirement, a question as simple and practical and as far from a legal phrase as 'how many quarts make a gallon'? This case is not a question of title and vested right, the primary object is to determine what is necessary, and proper, and practical.

I surmise that your objection to taking up this work is based wholly on the legal status of the case, now if all the parties to this case, plaintiff and defendants, desire and ask jointly for this work to be done, will you undertake it?

Truly,

Commissioner Provo River.